

REMARKS

Introduction

By this Response, claims 1, 6, and 13 have been amended. Support for the amendments is found in the specification as originally filed. Reconsideration of this application as amended, and allowance of all pending claims are hereby respectfully requested.

Rejection under 35 U.S.C. § 112, second paragraph

In the Office Action, the Examiner rejected claims 1-16 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner raised rejections under 35 U.S.C. § 112, second paragraph, based on the contention that the claim term “the MOS transistor for the operating power supply voltage” recited in claim 1, 6, and 13, is not understood. By this Response, the Applicants have accordingly amended claims 1, 6, and 13 to point out and distinctly claim the subject matter which applicant regards as the invention. The amended claims 1, 6, and 13 clarify the relationship between the “operating power supply voltage” and the “MOS transistor” to address the Examiner’s concern.

Rejection under 35 U.S.C. § 102

In the Office Action, claims 1-16 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent 5,397,934 issued to Merrill et al. (hereafter “Merrill”). The Applicants respectfully traverse the rejection.

First, although all claims (1-16) have been rejected 35 U.S.C. § 102, the Examiner presented his 102 rejections only with respect to claims 1-5 and 13-16. In addition, the Examiner indicated, in Section “Allowable Subject Matter”, that claims 6-12 “would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, set for the in this Office action”.

Considering these facts, the Applicants take the position that the rejection of claim 6-12 under 35 U.S.C. § 102 is an error. Thus, the Applicants respectfully request that the rejection of claims 6-12 under 35 U.S.C. § 102 be withdrawn.

Second, in the Office Action, the Examiner asserted that because Merrill et al. teach the control of a threshold voltage, “clearly, for this target threshold voltage, there must necessarily be a ‘target saturation current value’” and, “as a result, the rejection is hereby maintained.” The Applicants respectfully disagree. According to Merrill et al., the goal is to achieve a target threshold voltage. This is different from achieving a target saturation current value. The reason is discussed in detail in the specification of the present invention. A saturation current value is affected by more than one attributing factors (see Expression 3 and discussion on page 3). That is, a same threshold voltage may not correspond to a same saturation current value. Therefore, achieving a target threshold voltage is not achieving a target saturation current value. Merrill et al. teach how to achieve a target threshold voltage NOT a target saturation current value.

Claim 1, as amended, recites a target saturation current value of a MOS transistor that is sufficient to satisfy a desired operation speed of the underlying circuit given a pre-determined power supply voltage. Claim 1 further recites a substrate potential control circuit that, by controlling the substrate potential of the MOS transistor, controls that an actual saturation current value of the MOS transistor equals the target saturation current value. A saturation current value can be affected by multiple attributing factors (see Expression 3 and discussion on page 3). Adjusting only one of such factors may not be able to maintain a stable saturation current value. Without a stable actual saturation current value, the operation speed may not be stable (see Expression 2 on page 3).

According to claim 1, the substrate potential is controlled in such a manner that the resulting actual saturation current value equals to the target saturation current value, which is set to satisfy a desired operation speed. When the saturation current value is stable, the delay time is stable (see

Expression 2 on page 3). Hence, the operation speed is stable. This is so because when the substrate potential is adjusted based on the criterion that the actual saturation current value equals to the target saturation current value set to achieve a desired operation speed, various attributing factors that may affect the actual saturation current value (e.g., gate capacitance C_{ox} and mobility μ) are also simultaneously considered and compensated.

In addition, the present invention teaches away what was taught by Merrill et al. See discussion in the specification with respect to Expression 1, Expression 2, and Expression 3 on pages 2-3 of the Applicants' Specification. As indicated therein, the threshold voltage is only one of various factors attributed to speed variation. Therefore, adjusting the threshold voltage alone without considering other factors may not suppress speed variations due to the fact that other attributing factors for the variations are not compensated. Merrill et al. do not teach control of a voltage threshold based on the criterion that an actual saturation current value resulted from the voltage threshold equals to a target saturation current value that is set to satisfy a desired operation speed.

Claim 13, as amended, recites a target saturation current value of a MOS transistor that is sufficient to satisfy a desired operation speed of the underlying circuit given a pre-determined power supply voltage. Claim 13 further recites a power supply voltage control circuit that, by controlling the voltage value of the operating power supply voltage supplied to the MOS transistor, controls that an actual saturation current value of the MOS transistor equals the target saturation current value. That is, the voltage value of the operating power supply voltage is controlled in such a manner that the resulted actual saturation current value equals to the target saturation current value, which is set to satisfy a desired operation speed. As discussed above with respect to claim 1, in this manner, various attributing factors that may affect the actual saturation current value (e.g., gate capacitance C_{ox} and mobility μ) are also considered and compensated. When the actual saturation current value is stable, the delay time (see Expression 2 on page 3) is also stable. Hence, the operation speed is stable.

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Merrill et al. do not teach control of voltage value of an operating power supply so that an actual saturation current value of the MOS transistor equals to a target saturation current value, determined to satisfy a desired operation speed, as recited in claim 13.

It is well-settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Merrill et al. fail to disclose and teach each and every feature, as recited in claims 1 and 13, the Applicants respectfully submits that Merrill et al. do not anticipate claims 1 and 13. Thus, claims 1 and 13 are patentable. Therefore, the Applicants respectfully request that the rejection of claims 1 and 13 under 35 U.S.C. §102(e) be withdrawn.

Claims 2-5 depend from claim 1. Therefore, claims 2-5 are patentable at least for the reasons stated above with respect to claim 1 and for the additional features recited therein. Therefore, the Applicants respectfully request that rejections of claims 2-5 under 35 U.S.C. §102(e) be withdrawn.

Claims 14-16 depend from claim 13. Therefore, claims 14-16 are patentable at least for the reasons stated above with respect to claim 13 and for the additional features recited therein. Therefore, the Applicants respectfully request that rejections of claims 2-5 under 35 U.S.C. §102(e) be withdrawn.

Allowable Subject Matter

The Applicants would like to thank the Examiner for indicating that claims 6-12 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph. By this Response, claims 6-12 have been amended to overcome the rejections under 35 U.S.C. 112, second paragraph.

By this Amendment, all rejections raised in the Office Action have been overcome. Therefore, it is believed that all pending claims are now in condition for allowance. Applicant


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therefore respectfully requests an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicant's representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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